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upon a stalk one and one-half or two inches long. The stalk is rather fleshy, and arises from a concave disk at the fork of the thallus. The receptacle is convex, obtuse at the apex, and is cut into six short lobes. Beneath these lobes are the involucres and their capsules, which resemble somewhat those of Marchantia. This species also is dioecious, and has bispiral elaters. It should be collected about the first week in April.

EXPLANATION OF FIGURES.

Fig. 1. Male plant of *Marchantia polymorpha* reduced.

Fig. 2. Section of male receptacle of *M.* magnified; a, a, a, antheridia.

Fig. 3. Female plant of *M.* reduced.

Fig. 4. Section of part of female receptacle of *M. polymorpha* magnified; s, sporogonia, one not yet emerged from perianth. The outer fringe represents the involucre.

Fig. 5. Portion of elater of *M. polymorpha*, showing spiral bands, magnified greatly.

Fig. 6. Sterile thallus with gemmae.

Fig. 7. Cells of thallus, with stomata magnified: a. Marchantia; b. Conocephalum.

Fig. 8. Thallus of *Conocephalum conicum* with female receptacles, reduced.

LICHENS—ALECTORIA, EVERNIA, RAMALINA.

By Carolyn W. Harris.

(*With Plate IV.*)

In this second article on lichens, *Alectoria*, *Evernia* and *Ramalina* will be considered. They belong to the same family as the Usneas, the *Usneei.*

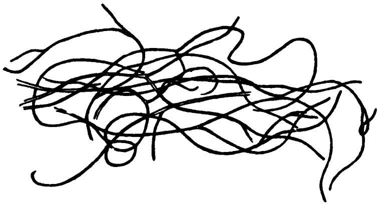

Fig. 1. *Alectoria jubata* var. *implexa* x 1.

In walking along country roads, you no doubt have noticed, on old fences or dead trees, little tufts of "black hair." These are Alectorias. The thallus is fruticose, rather rigid and short, again soft and pendulous. At the joints it is flattened, for the medullary cord is not solid like that of *Usnea*, but is soft and web-like; the flattening at the joints gives greater strength and tenacity to the thallus. Except in color, *Alectoria* resembles *Usnea*. It is not the gray-green of the latter, but varies from light brown to almost black. In only one species is it at all green. The surface has a smooth, shiny appearance, as though it had been varnished. The apothecia are small and sessile ; they are not surrounded by fine fibrils as in *Usnea*. They are usually the same color as the thallus, and have the same shiny appearance.

The most common form of the genus is *Alectoria jubata* L. var. *chaly-*

The magnification of figures 2 and 4 is twice too great, as figures were reduced ½.

beiformis Ach. (Plate IV. a.) The thallus is round (terete) except at the joints, where it is flattened. In color it is almost black, shiny and rigid, and grows in tufts. The branches are finer at the tips, and of one color. Soredia are usually found, which are interesting on account of their shape. Instead of being in round, mealy-looking masses, seemingly sessile on the thallus as in *Usnea*, they are whitish, oval bodies, which seem to be imbedded in the thallus.

Alectoria jubata var. *implexa* Fr. (Fig. 1.) Thallus pendulous, quite soft, with many branches, which are intertangled and turn back on each other. It is a much lighter brown than *chalybeiformis*, and does not have the varnished appearance. While this species is found in the eastern States, it grows more luxuriantly in the far West, where with one or two other species it is generally called by travelers "Florida Moss," as it hangs from the trees in long masses

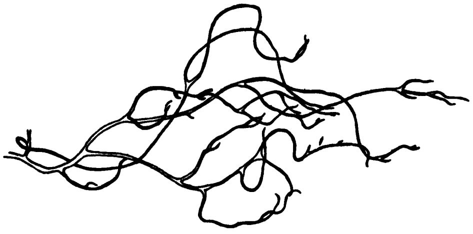

Fig. 2. *Alectoria ochroleuca* var. *sarmentosa* x 2.

Alectoria ochroleuca (Ehhr·) Nyl. var. *sarmentosa* Nyl. (Fig. 2), is also found in the East, but is rare; in the West it is very common. The thallus is pendulous, but not as soft as in *implexa*. The color is a light, greenish-brown, sometimes straw-color. The branches are long and much divided. They do not turn back as in *implexa*. The apothecia are small, and dark chestnut in color.

Alectoria Fremontii Tuckerm. (Fig. 3.) The thallus is a very dark brown, wavy and shiny, with few branches, which are quite straight until toward the ends, where they grow much finer and are intertangled. The apothecia are small and yellow. This also is a western lichen.

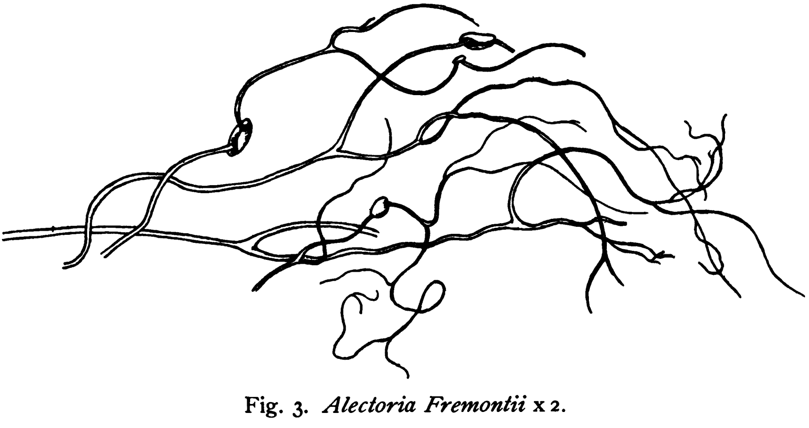

Fig. 3. *Alectoria Fremontii* x 2.

Evernia, although belonging to the same family as *Usnea* and *Alectoria*, is quite different in its general appearance. The thallus is fruticose, soft, somewhat flattened and wrinkled. It is usually covered with soredia, which in some species are very mealy. The color is either light gray, greenish-gray, or lemon. *Evernia* has a medullary layer which is very cottony and soft. The apothecia are large and flat; in some species they are surrounded by coarse fibrils, in others they are free from them.

Evernia prunastri (L.) Ach. (Plate IV. b) if found quite generally, varying somewhat in appearance in different localities. It grows on trees. The thallus is pale green, flattened and furrowed. It is usually covered with soredia, which are green, not white as in *Alectoria*. The branching is angular, pointed or spike-like at the tips. Below, the thallus is channeled. The apothecia are very rare. They are lateral, namely, borne on the flat surface of the thallus.

Evernia furfuracea (L.) Mann. (Fig. 4.) The thallus, while flattened, turns under a little, giving the lower side a trough-like appearance. Branching is more frequent than in *prunastri*, and is more pinnate. The thallus, which is a light gray, is slightly rough or coral-like. Below it is black or has black spots on it. The apothecia are small and on the margin of the thallus. They are cup-shape and reddish-brown.

Evernia furfuracea var. *Cladonia* Tuckerm. is much like *furfuracea*, only much smaller and finer, and more brittle. This form is found in the mountains.

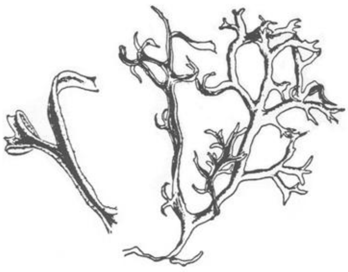

Fig. 4. *Evernia furfuracea* x 2 and x 4.

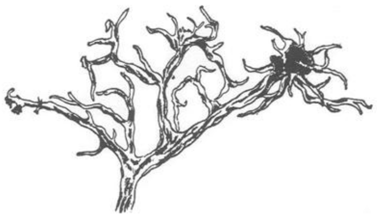

Fig. 5. *Evernia vulpina* x 1.

Evernia vulpina (L.) Ach. (Fig. 5.) Thallus flattened and wrinkled, bright lemon-color. The branches are long with attenuated tips. Apothecia large, reddish-brown, surrounded by spine-like branches. This striking lichen is found on the Pacific coast as far south as Lower California, and back in the mountains. By its color it attracts the notice of tourists, and is collected when the rarer and less conspicuous lichens are passed by.

Ramalina, like *Evernia*, has a flattened thallus. It is fruticose, and in some species pendulous, is often strap-like and sparingly branched. The medullary layer is cottony, but cord-like, so is stronger and more rigid than that of *Evernia*. The apothecia vary in size, they are flattened or cup-shaped, occuring along the margin or on the flat surface of the thallns. Soredia when present are large and very mealy.

Ramalina calicaris (L.) Fr. var. *fastigiata* Fr. (Plate IV. c.) Thallus alike on both sides, pale green, rather rigid, cut into parallel strap-like portions with few branches. It grows in tufts from one to two inches long, is usually fertile. The apothecia are large and flattened, a little lighter green than the thallus.

Ramalina calicaris var. *fraxinea* Fr. The thallus, which is wide and long-lobed, suggests a bunch of small withered leaves, and is a dull green. The apothecia are small, and are borne on the flat surface of the thallus.

Ramalina calicaris var. *farinacea* Schaer. (Plate IV. d. and Fig. 6), has a fine, much-branched thallus, is a delicate green, covered with white, powdery, confluent soredia. The apothecia are lateral, but are rare. This species is usually found on rocks, growing in a mass.

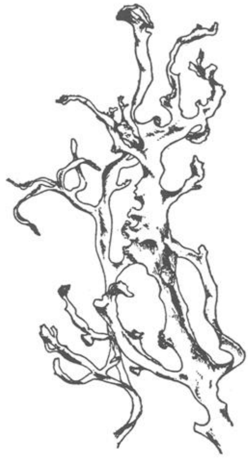

Fig. 6. *Ramalina calicaris* var. *farinacea* x 2.

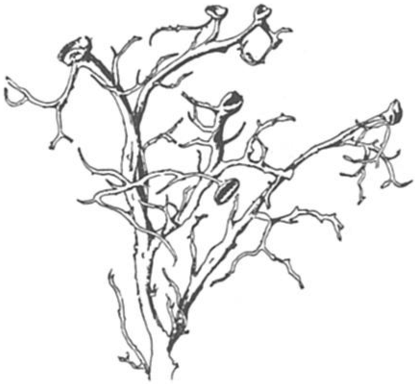

Fig. 7. *Ramalina rigida* x 2.

Ramalina rigida Pers. (Fig. 7.) The thallus is slender, with irregular branches which are fine and stiff. The apothecia are medium in size, and from each extends a long, horn-like branch.

Ramalina reticulata Noehd. (Fig. 8.) In this handsome lichen of the far West, the thallus is elongated and pendulous, with many branches, which form a thick mat, hanging for several feet from the trees. The thallus is brownish-green; the longitudinal branches here and there unite and form a beautiful network, sometimes coarse, sometimes very fine and delicate.

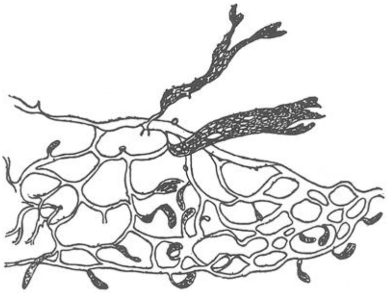

Fig. 8. *Ramalina reticulata* x 1.

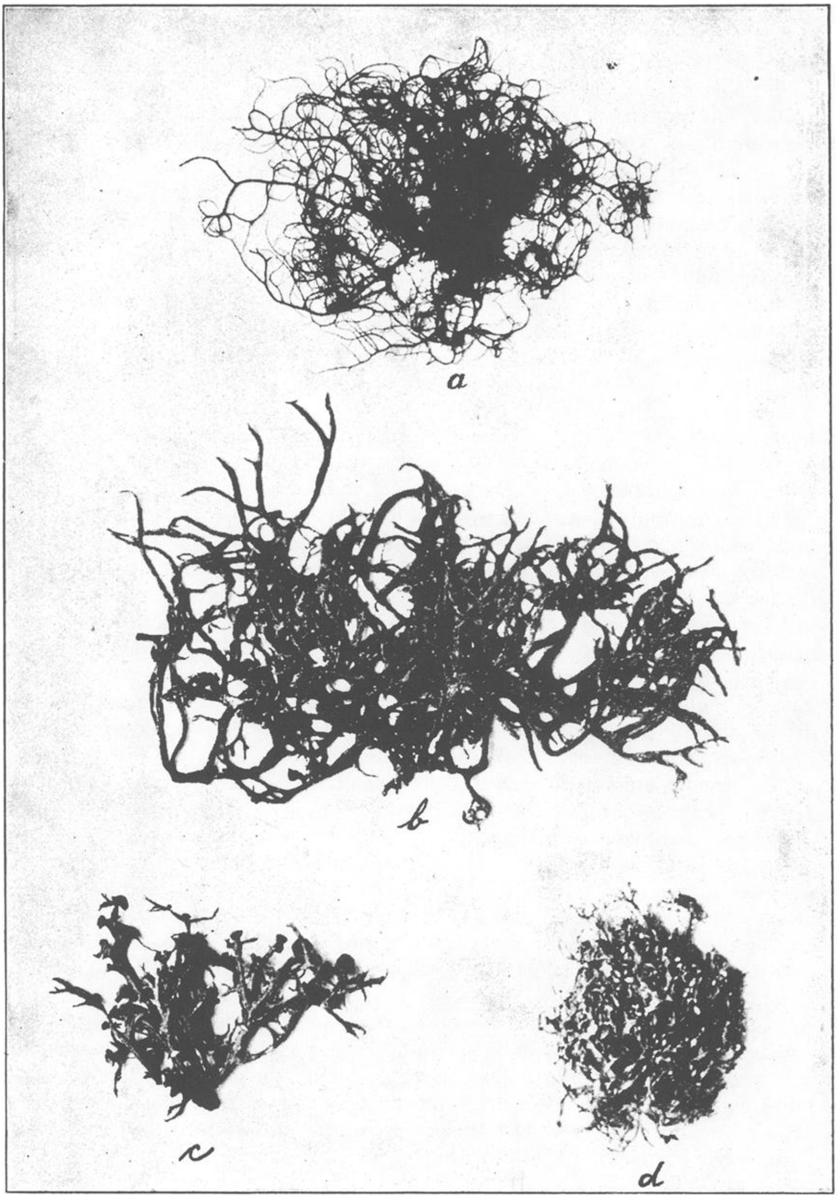

Plate IV. a. *Alectoria jubata* var. *chalybeiformis*. b. *Evernia prunastri*. c. *Ramalina calicaris* var. *fastigiata*. d. *Ramalina calicaris* var. *farinacea*.